



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Critical Care

TOPIC: Critical Care

TYPE: Medical Student/Resident Case Reports

VITT REACTION ASSOCIATED WITH JOHNSON & JOHNSON COVID-19 VACCINE

MELANIE AKUNA MOEEZ QURESHI AND NATHAN MILLER

INTRODUCTION: Vaccine induced thrombotic thrombocytopenia (VITT) after COVID-19 vaccination is a rare complication previously noted in the AstraZeneca vaccine [2], and more recently with Johnson & Johnson's vaccine [3]. Both vaccines use a Viral-Vector for delivery [1].

CASE PRESENTATION: A 59-year-old caucasian woman with past medical history significant for coronary artery disease, hypertension, COPD, and tobacco use. She initially presented to Urgent Care with a complaint of 5 days of progressive left leg swelling with associated pain and erythema. No recent illness, immobility, or injury. She was transferred to the hospital Emergency Department for evaluation of suspected DVT. Venous doppler of the left leg performed in the emergency department found extensive occlusive DVT of the left superficial femoral, popliteal, posterior tibial, and peroneal veins. Initial labs were significant for thrombocytopenia with a platelet count of $15 \times 10^3/\mu\text{L}$, INR of 1.3 with low fibrinogen and high fibrin degradation products, and elevated LDH of 704 U/L. Unable to treat her DVT with anticoagulation, an IVC filter was placed and she was admitted to medicine. Early the next morning the patient began experiencing loss of sensation in the right foot. Arterial doppler of the right leg significant for high-grade occlusion of the right proximal superficial femoral artery. She was again emergently taken to the cath lab where abdominal aortogram showed occlusions of bilateral iliac and superficial femoral arteries. Bilateral thrombectomy and stents were placed in both iliac arteries. Hematology was consulted for what appeared to be HIT reaction despite no heparin exposure and treatment with Bivalirudin was initiated. With more detailed history, it was discovered that the patient had recovered from an uneventful COVID-19 infection in January and recently had Johnson & Johnson COVID-19 vaccine administered just 10 days prior to symptom onset. A report was filed to the Vaccine Adverse Event Reporting System (VAERS). Peripheral blood smear noted thrombocytopenia with normocytic anemia, but no schistocytes were seen. HIT panel was positive HIT antigen on PF4 and positive SRA, with an OD of 0.519. No further clot formation occurred during her stay and platelet count improved after initiation of bivalirudin.

DISCUSSION: Recently the Johnson & Johnson COVID-19 vaccine was placed on hold in the U.S. for investigation of 6 cases of serious VITT reactions in women [3], confirmed with positive PF4 heparin antibodies without any heparin exposure, as was the case with our patient. Spontaneous HIT (or VITT) with positive PF4 antibodies despite no known heparin exposure is thought to be due to cross-reactivity from similar polyanions [2].

CONCLUSIONS: Considering VITT for thrombocytopenia and thrombosis within 2 weeks after COVID-19 vaccination may be beneficial in earlier treatment with bivalirudin to prevent further vascular occlusions.

REFERENCE #1: C. Buddy Creech, MD. "SARS-CoV-2 Vaccines-An Overview." JAMA, JAMA Network, 6 Apr. 2021, jamanetwork.com/journals/jama/fullarticle/2777059.

REFERENCE #2: Greinacher, Andreas, et al. "A Prothrombotic Thrombocytopenic Disorder Resembling Heparin-Induced Thrombocytopenia Following Coronavirus-19 Vaccination." Research Square, 29 Mar. 2021, www.researchsquare.com/article/rs-362354/v1.

REFERENCE #3: "Joint CDC and FDA Statement on Johnson & Johnson COVID-19 Vaccine." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 13 Apr. 2021, www.cdc.gov/media/releases/2021/s0413-JJ-vaccine.html.

DISCLOSURES: No relevant relationships by Melanie Akuna, source=Web Response

No relevant relationships by Nathan Miller, source=Web Response

No relevant relationships by Moez Qureshi, source=Web Response

DOI: <https://doi.org/10.1016/j.chest.2021.07.764>

Copyright © 2021 American College of Chest Physicians. Published by Elsevier Inc. All rights reserved.